

AMENDMENTS TO THE CLAIMS

1-7. (Canceled)

8. (Currently Amended) A method for constructing a scalable computer system, the method comprising:
interconnecting a plurality of computing nodes to form a plurality of node clusters;
providing a plurality of cross-links between the node clusters;
~~directly connecting the plurality of node clusters via the plurality of cross-links such that the system comprises a small-world network; and~~
~~wherein the small-world network comprises~~
directly connecting, using the plurality of cross-links, a corresponding plurality of pairs of node clusters selected from the plurality of node clusters in accordance with a selection process resulting in a formation of a network of said plurality of computing nodes having a substantially higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network in combination with a substantially lower characteristic path length between the nodes in comparison with a corresponding regularly-connected network; and
wherein the steps of providing the plurality of cross-links and directly connecting the plurality of pairs of node clusters in accordance with said selection process are repeated until the resulting network comprises a small-world network having an average path length between the plurality of nodes falling within a predetermined desired range, independently of a number of said plurality of computing nodes.

9. (Currently Amended) The method of claim 8, wherein said selection process is the cross-links are provided in accordance with a random or pseudo-random process.

10. (Previously Presented) The method of claim 8, wherein the step of interconnecting the plurality of computing nodes is performed such that the node clusters are fully interconnected.

11. (Currently Amended) The method of claim 8, wherein ~~the step of directly connecting the plurality of node clusters is performed such that an average path length between the plurality of nodes~~ said predetermined range of the average path length between the plurality of nodes is less than 2.0.

12. (Currently Amended) The method of claim 11, wherein ~~the average path length between the plurality of nodes~~ said predetermined range of the average path length between the plurality of nodes is between 1.5 and 1.7.

13. (Previously Presented) A scalable computer system constructed in accordance with the method of claim 8.

14. (Currently Amended) A method for constructing a large scale computer system, the method comprising:
forming clusters of fully interconnected nodes by arranging a plurality of nodes in a network with neighboring sets of nodes, wherein each node of the plurality of nodes includes a plurality of interconnected processors;
providing a plurality of cross-links between selected nodes of different clusters;

~~directly connecting the selected nodes via the plurality of cross-links such that the system comprises a small world network;~~

~~wherein the small world network comprises~~

directly connecting, using the plurality of cross-links, a corresponding plurality of pairs of the selected nodes of different clusters, said pairs being selected in accordance with a selection process resulting in a formation of a network of said nodes having a substantially higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network in combination with a substantially lower characteristic path length between the nodes in comparison with a corresponding regularly-connected network;

wherein the steps of providing the plurality of cross-links and directly connecting the plurality of pairs of the selected nodes of different clusters in accordance with said selection process are repeated until the resulting network comprises a small-world network having an average path length between the plurality of nodes falling within a predetermined desired range, independently of a number of said plurality of nodes; and

wherein each processor of the system can communicate effectively with other processors regardless of their location in the network and without full connectivity in the network.

15. (Currently Amended) The method of claim 14, wherein said selection process is the cross-links are provided in accordance with a random or pseudo-random process.

16. (Currently Amended) The method of claim 14, wherein ~~the step of directly connecting the selected nodes is performed such that an average path length between the plurality of nodes~~ said predetermined range of the average path length between the plurality of nodes is less than 2.0.

17. (Currently Amended) The method of claim 15, wherein ~~the average path length between the plurality of nodes~~ said predetermined range of the average path length between the plurality of nodes is between 1.5 and 1.7.

18. (Previously Presented) A large scale computer system constructed in accordance with the method of claim 14.